

Adaptive Learning in Andhra Pradesh Shows Significant Gains

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Adaptive Learning Latest News

- The Andhra Pradesh Personalised Adaptive Learning (PAL) programme is in the news after a Nobel laureate-led study found it significantly boosted students' math learning outcomes.

Introduction

- Education reforms in India have increasingly focused on leveraging technology to bridge learning gaps.
- One of the promising interventions in this space is **Personalised Adaptive Learning (PAL)**, a digital model that tailors educational content to individual students' needs.
- Andhra Pradesh has been at the forefront of implementing PAL, and a recent evaluation led by **Nobel laureate Michael Kremer** has revealed significant learning gains, especially in mathematics.

Personalised Adaptive Learning

- Personalised Adaptive Learning refers to **an educational approach where software dynamically adjusts content and difficulty levels according to the learner's performance.**
- This creates a **customized pathway for each student**, ensuring that those who lag receive additional support, while advanced learners are challenged further.
- **Key features of PAL include:**
 - Gamification of concepts to enhance engagement.
 - Continuous assessment that adapts in real-time.
 - Use of digital devices such as tablets and laptops.
 - Focus on skill mastery rather than rote memorisation.
- The Andhra Pradesh government, in collaboration with **ConveGenius AI**, introduced PAL in select schools to address the issue of low foundational numeracy and to improve overall math proficiency among government school students.

The Andhra Pradesh Experiment

- The state government began implementing PAL in **2018**, scaling it gradually to 500 schools.
- To scientifically measure its effectiveness, a **Randomised Control Trial (RCT)** was conducted across 120 government schools between 2023 and 2025.
 - **Treatment group:** 30 schools received PAL-equipped labs with tablets.
 - **Control group:** 30 schools without PAL for comparison.
 - **Sample size:** Around 6,800 students across Grades 6 to 9.
 - **Intervention period:** 17 months, with students spending an average of 35.3 hours on the software.
- Each participating school had dedicated **PAL labs with 30 tablets**, and students engaged in two math sessions per week, each lasting 40 minutes.

Key Findings from the Study

- According to the study, the PAL intervention yielded striking results:
 - **Learning Gains:** Students achieved the equivalent of **1.9 additional years of schooling** compared to peers without PAL.
 - **Faster Progress:** Students using PAL learned **at almost double the rate** of those in the control group.
 - **Impact by Grade:** Gains were higher in younger grades (6 and 7) since students had greater access to devices.
 - **Gender Gap:** Girls benefited more than boys, largely due to higher usage hours.
 - **Cost-effectiveness:** Annual per-student implementation cost was estimated at **\$20-25**, making it a scalable and affordable model.
- Importantly, the evaluation was conducted independently and included **external math assessments**, ensuring the results were unbiased.

Broader Implications for India

- The Andhra Pradesh model is being hailed as a **proof of concept** for technology-driven learning interventions in India.
- With nearly 45,000 government schools in the state, scaling PAL across all institutions remains a logistical challenge but holds significant promise.
- Nationally, PAL can address:
 - The learning crisis highlighted by **ASER reports**, which repeatedly show low math and reading levels among Indian students.
 - The growing demand for **EdTech solutions** that complement traditional teaching.
 - The need for **cost-effective scalable interventions** to improve public education quality.

Future Outlook

- The Andhra Pradesh government has announced plans to **expand PAL to 1,224 schools**, including PM-SHRI and residential schools.
- If successful, the intervention could serve as a **national model for digital learning reforms**.
- Experts suggest that combining PAL with teacher training and infrastructure investment can transform India's education system, equipping students with the critical skills needed for the 21st century.

Source: TH

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